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NEWS 3 Feb 24 PCTGEN now available on STN
NEWS 4 Feb 24 TEMA now available on STN
NEWS 5 Feb 26 NTIS now allows simultaneous left and right truncation
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NEWS 7 Mar 04 SDI PACKAGE for monthly delivery of multifile SDI results
NEWS 8 Mar 24 PATDPAFULL now available on STN
NEWS 9 Mar 24 Additional information for trade-named substances without
structures available in REGISTRY
NEWS 10 Apr 11 Display formats in DGENE enhanced
NEWS 11 Apr 14 MEDLINE Reload
NEWS 12 Apr 17 Polymer searching in REGISTRY enhanced
NEWS 13 AUG 22 Indexing from 1927 to 1936 added to records in CA/CAPLUS
NEWS 14 Apr 21 New current-awareness alert (SDI) frequency in
WPIDS/WPINDEX/WPIX
NEWS 15 Apr 28 RDISCLOSURE now available on STN
NEWS 16 May 05 Pharmacokinetic information and systematic chemical names
added to PHAR
NEWS 17 May 15 MEDLINE file segment of TOXCENTER reloaded
NEWS 18 May 15 Supporter information for ENCOMPPAT and ENCOMPLIT updated
NEWS 19 May 19 Simultaneous left and right truncation added to WSCA
NEWS 20 May 19 RAPRA enhanced with new search field, simultaneous left and
right truncation
NEWS 21 Jun 06 Simultaneous left and right truncation added to CBNB
NEWS 22 Jun 06 PASCAL enhanced with additional data
NEWS 23 Jun 20 2003 edition of the FSTA Thesaurus is now available
NEWS 24 Jun 25 HSDB has been reloaded
NEWS 25 Jul 16 Data from 1960-1976 added to RDISCLOSURE
NEWS 26 Jul 21 Identification of STN records implemented
NEWS 27 Jul 21 Polymer class term count added to REGISTRY
NEWS 28 Jul 22 INPADOC: Basic index (/BI) enhanced; Simultaneous Left and
Right Truncation available
NEWS 29 AUG 05 New pricing for EUROPATFULL and PCTFULL effective
August 1, 2003
NEWS 30 AUG 13 Field Availability (/FA) field enhanced in BEILSTEIN
NEWS 31 AUG 15 PATDPAFULL: one FREE connect hour, per account, in
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NEWS 32 AUG 15 PCTGEN: one FREE connect hour, per account, in
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NEWS 33 AUG 15 RDISCLOSURE: one FREE connect hour, per account, in
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NEWS 35 AUG 18 Data available for download as a PDF in RDISCLOSURE
NEWS 36 AUG 18 Simultaneous left and right truncation added to PASCAL
NEWS 37 AUG 18 FROSTI and KOSMET enhanced with Simultaneous Left and Right
Truncation

NEWS 38 AUG 18 Simultaneous left and right truncation added to ANABSTR

NEWS EXPRESS April 4 CURRENT WINDOWS VERSION IS V6.01a, CURRENT MACINTOSH VERSION IS V6.0b(ENG) AND V6.0Jb(JP), AND CURRENT DISCOVER FILE IS DATED 01 APRIL 2003
NEWS HOURS STN Operating Hours Plus Help Desk Availability
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NEWS LOGIN Welcome Banner and News Items
NEWS PHONE Direct Dial and Telecommunication Network Access to STN
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Enter NEWS followed by the item number or name to see news on that specific topic.

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FILE 'HOME' ENTERED AT 08:53:34 ON 05 SEP 2003

=> index bioscience
FILE 'DRUGMONOG' ACCESS NOT AUTHORIZED
COST IN U.S. DOLLARS

FULL ESTIMATED COST

INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, AQUASCI, BIOBUSINESS, BIOCOMMERCE, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA, CANCERLIT, CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPB, CROPU, DDFB, DDFU, DGENE, DRUGB, DRUGLAUNCH, DRUGMONOG2, ...' ENTERED AT 08:53:47 ON 05 SEP 2003

67 FILES IN THE FILE LIST IN STNINDEX

Enter SET DETAIL ON to see search term postings or to view search error messages that display as 0* with SET DETAIL OFF.

=> s cellulase or endoglucanase

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145	FILE ANABSTR
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65 FILE FOREGE
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5270 FILE PASCAL
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1839 FILE TOXCENTER
5305 FILE USPATFULL
185 FILE USPAT2
10 FILE VETB
222 FILE VETU
2745 FILE WPIDS
2745 FILE WPINDEX

58 FILES HAVE ONE OR MORE ANSWERS, 67 FILES SEARCHED IN STNINDEX

L1 QUE CELLULASE OR ENDOGLUCANASE

=> d rank

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F24	1400	IFIPAT
F25	880	FROSTI
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F27	353	PROMT
F28	305	AQUASCI
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F34	169	BIOCOMMERCE
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F47	24	CEN
F48	22	EMBAL
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F50	20	RDISCLOSURE
F51	12	NIOSHTIC
F52	11	PHIN
F53	10	VETB
F54	5	KOSMET
F55	3	ADISCTI
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F57	1	ADISNEWS
F58	1	SYNTHLINE

=> file f1-f8, f10-f14

COST IN U.S. DOLLARS

FULL ESTIMATED COST

SINCE FILE ENTRY	TOTAL SESSION
1.65	1.86

FILE 'CAPLUS' ENTERED AT 08:55:22 ON 05 SEP 2003

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FILE 'BIOTECHABS' ACCESS NOT AUTHORIZED

FILE 'BIOTECHDS' ENTERED AT 08:55:22 ON 05 SEP 2003

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FILE 'CABA' ENTERED AT 08:55:22 ON 05 SEP 2003

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FILE 'PASCAL' ENTERED AT 08:55:22 ON 05 SEP 2003
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FILE 'MEDLINE' ENTERED AT 08:55:22 ON 05 SEP 2003

=> s 11 and cellulovorans
L2 445 L1 AND CELLULOVORANS

=> s 12 and cellulozome
L3 6 L2 AND CELLULOZOME

=> dup rem 13
PROCESSING COMPLETED FOR L3
L4 6 DUP REM L3 (0 DUPLICATES REMOVED)

=> d 14 ibib ab 1-6

L4 ANSWER 1 OF 6 USPATFULL on STN
ACCESSION NUMBER: 2002:276045 USPATFULL
TITLE: Laundry detergent and/or fabric care compositions comprising a modified enzyme
INVENTOR(S): Smets, Johan, Lubbeek, BELGIUM
Bettoli, Jean-Luc Philippe, Brussels, BELGIUM
Boyer, Stanton Lane, Fairfield, OH, United States
Busch, Alfred, Londerzeel, BELGIUM
PATENT ASSIGNEE(S): The Proctor & Gamble Company, Cincinnati, OH, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6468955	B1	20021022
	WO 9957252		19991111
APPLICATION INFO.:	US 2000-674478	20001101	(9)
	WO 1999-US9453		19990430

	NUMBER	DATE
PRIORITY INFORMATION:	WO 1998-US8856	19980501
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	GRANTED	
PRIMARY EXAMINER:	Kopec, Mark	
ASSISTANT EXAMINER:	Elhilo, Eisa	
LEGAL REPRESENTATIVE:	Taffy, Frank, Cook, C. Brant, Zerby, K. W.	
NUMBER OF CLAIMS:	8	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	0 Drawing Figure(s); 0 Drawing Page(s)	
LINE COUNT:	2792	
CAS INDEXING IS AVAILABLE FOR THIS PATENT.		

AB Modified enzymes which comprise a catalytically active amino acid sequence of an enzyme, linked via a non-amino acid linking region to an amino acid sequence comprising a Cellulose Binding Domain. The present invention further relates to laundry detergent and/or fabric care compositions comprising such modified enzymes. These compositions provide a higher effective concentration of the enzyme at its substrate location and therefore, improved enzymatic benefits.

L4 ANSWER 2 OF 6 USPATFULL on STN

ACCESSION NUMBER: 2002:268719 USPATFULL
TITLE: Laundry detergent and/or fabric care composition comprising a modified antimicrobial protein
INVENTOR(S): Bettiol, Jean-Luc Philippe, Brussels, BELGIUM
Smets, Johan, Lubbeek, BELGIUM
Boyer, Stanton Lane, Fairfield, OH, United States
PATENT ASSIGNEE(S): The Procter & Gamble, Cincinnati, OH, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6465410	B1	20021015
	WO 9957157		19991111
APPLICATION INFO.:	US 2000-674471		20001101 (9)
	WO 1999-US9455		19990430
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	GRANTED		
PRIMARY EXAMINER:	Gupta, Yogendra N.		
ASSISTANT EXAMINER:	Elhilo, Eisa		
LEGAL REPRESENTATIVE:	Cook, C. Brant, Zerby, Kim W., Miller, Steve W.		
NUMBER OF CLAIMS:	8		
EXEMPLARY CLAIM:	1		
NUMBER OF DRAWINGS:	0 Drawing Figure(s); 0 Drawing Page(s)		
LINE COUNT:	2894		

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A modified protein which comprises a catalytically active amino acid sequence of an antimicrobial enzyme and/or an amino acid sequence of an antimicrobial peptide linked to an amino acid sequence comprising a cellulose binding domain (CBD), and laundry detergents and/or fabric care compositions comprising such modified protein for improved sanitization benefits, are provided by the present invention.

L4 ANSWER 3 OF 6 USPATFULL on STN

ACCESSION NUMBER: 2002:152607 USPATFULL
TITLE: Laundry detergent and/or fabric care compositions comprising a modified transferase
INVENTOR(S): Smets, Johan, Lubbeek, BELGIUM
Barnabas, Mary Vijayarani, West Chester, OH, United States
Showell, Michael Stanford, Cincinnati, OH, United States
Boyer, Stanton Lane, Fairfield, OH, United States
Convents, Andre Christian, Cincinnati, OH, United States
PATENT ASSIGNEE(S): Procter & Gamble Company, Cincinnati, OH, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6410498	B1	20020625
	WO 9957254		19991111
APPLICATION INFO.:	US 2000-674472		20001111 (9)
	WO 1999-US9480		19990430
			20001101 PCT 371 date
DOCUMENT TYPE:	Utility		

FILE SEGMENT: GRANTED
 PRIMARY EXAMINER: Douyon, Lorna M.
 ASSISTANT EXAMINER: Elhilo, Eisa
 LEGAL REPRESENTATIVE: Cook, C. Brant, Zerby, Kim W., Miller, Steve W.
 NUMBER OF CLAIMS: 38
 EXEMPLARY CLAIM: 1
 NUMBER OF DRAWINGS: 0 Drawing Figure(s); 0 Drawing Page(s)
 LINE COUNT: 3228
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention relates to a modified enzyme which comprises a catalytically active amino acid sequence of a transferase linked to an amino acid sequence comprising a Cellulose Binding Domain (CBD). The present invention further relates to laundry detergent and/or fabric care compositions comprising such modified enzyme, for improved fabric care and cleaning benefits.

L4 ANSWER 4 OF 6 CAPLUS COPYRIGHT 2003 ACS on STN
 ACCESSION NUMBER: 1999:723159 CAPLUS
 DOCUMENT NUMBER: 131:324167
 TITLE: Laundry detergent and/or fabric care compositions comprising a modified transferase
 INVENTOR(S): Smets, Johan; Barnabas, Mary Vijayarani; Showell, Michael Stanford; Boyer, Stanton Lane; Convents, Andre Christian
 PATENT ASSIGNEE(S): Procter & Gamble Co., USA
 SOURCE: PCT Int. Appl., 106 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9957258	A1	19991111	WO 1998-US8905	19980501
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9874709	A1	19991123	AU 1998-74709	19980501
CA 2330488	AA	19991111	CA 1999-2330488	19990430
WO 9957254	A1	19991111	WO 1999-US9480	19990430
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9939683	A1	19991123	AU 1999-39683	19990430
EP 1075509	A1	20010214	EP 1999-922758	19990430
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI				
BR 9910147	A	20011002	BR 1999-10147	19990430
JP 2002513563	T2	20020514	JP 2000-547210	19990430
US 6410498	B1	20020625	US 2000-674472	20001111
PRIORITY APPLN. INFO.:			WO 1998-US8905	A 19980501
			WO 1999-US9480	W 19990430

AB The present invention relates to a modified enzyme which comprises a

catalytically active amino acid sequence of a transferase linked to an amino acid sequence comprising a Cellulose Binding Domain (CBD). A specific embodiment comprises CBD-transferase, which is dextranase or transglutaminase or Toruzyme linked by PEG(NPC)2 to the cellulose-binding domain **Cellulozome** from *Clostridium cellulovorans*.

The laundry detergent and/or fabric care compn. preferably further comprises a detergent ingredient selected from an anionic surfactant (alkyl sulfate, alkyl ethoxy sulfate, linear alkylene sulfonate), nonionic surfactant (alkyl ethoxylate), cationic surfactants, enzymes (protease, **cellulase**, lipase, amylase), bleaching agents, dye transfer inhibiting agents, dispersants, and smectite clay. The present invention further relates to laundry detergent and/or fabric care compns. comprising such modified enzyme, for improved fabric care and cleaning benefits.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 1999:723157 CAPLUS

DOCUMENT NUMBER: 131:338639

TITLE: Laundry detergent and/or fabric care compositions comprising a modified **cellulase**

INVENTOR(S): Busch, Alfred; Bettiol, Jean-luc Philippe; Smets, Johan; Boyer, Stanton Lane

PATENT ASSIGNEE(S): Procter & Gamble Co., USA

SOURCE: PCT Int. Appl., 87 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9957256	A1	19991111	WO 1998-US8903	19980501
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9875641	A1	19991123	AU 1998-75641	19980501
CA 2330394	AA	19991111	CA 1999-2330394	19990430
WO 9957260	A1	19991111	WO 1999-US9481	19990430
W: BR, CA, CN, IN, JP, MX, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1073726	A1	20010207	EP 1999-920213	19990430
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI				
JP 2002513565	T2	20020514	JP 2000-547216	19990430
PRIORITY APPLN. INFO.:			WO 1998-US8903	A 19980501
			WO 1999-US9481	W 19990430

AB The present invention relates to a modified enzyme and laundry detergent and/or fabric care compns. comprising this modified enzyme. This modified enzyme comprises a catalytically active amino acid sequence of a cellulolytic enzyme **endoglucanase** I linked to an amino acid sequence comprising a Cellulose Binding Domain (CBD). A specific embodiment comprises CBD-Endolase, which is the cellulolytic enzyme core derived from the enzyme sold under the tradename Endolase linked by PEG(NPC)2 (mol. wt. 3400) to the CBD **Cellulozome** from *Clostridium cellulovorans*. The laundry detergent and/or fabric care compns. preferably further comprise a detergent ingredient selected from cationic surfactants, proteolytic enzymes, bleaching agents, builders

(in particular zeolite A and sodium tripolyphosphate) and/or clays. These compns. provide excellent overall cleaning including stain removal and whitening maintenance, while preventing any neg. effect on the fabric. These compns. further provide fabric care, including anti-bobbling, depilling, color appearance, fabric softness and fabric anti-wear properties and benefits, while preventing any neg. effect on the fabric.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 6 OF 6 CAPLUS COPYRIGHT 2003 ACS on STN
 ACCESSION NUMBER: 1999:723153 CAPLUS
 DOCUMENT NUMBER: 131:324165
 TITLE: Laundry detergent and/or fabric care compositions comprising an enzyme modified with a cellulose-binding domain
 INVENTOR(S): Smets, Johan; Bettiol, Jean-Luc Philippe; Boyer, Stanton Lane; Busch, Alfred
 PATENT ASSIGNEE(S): The Procter & Gamble Company, USA
 SOURCE: PCT Int. Appl., 96 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9957250	A1	19991111	WO 1998-US8856	19980501
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9872754	A1	19991123	AU 1998-72754	19980501
CA 2330614	AA	19991111	CA 1999-2330614	19990430
WO 9957252	A1	19991111	WO 1999-US9453	19990430
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RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
BR 9910151	A	20010109	BR 1999-10151	19990430
BR 9910158	A	20010109	BR 1999-10158	19990430
EP 1073724	A1	20010207	EP 1999-920204	19990430
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI				
JP 2003522517	T2	20030729	JP 2000-547208	19990430
US 6465410	B1	20021015	US 2000-674471	20001101
US 6468955	B1	20021022	US 2000-674478	20001101
PRIORITY APPLN. INFO.:			WO 1998-US8856	A 19980501
			WO 1999-US9453	W 19990430
			WO 1999-US9455	W 19990430

AB The present invention relates to a modified enzyme which comprises a catalytically active amino acid sequence of an enzyme, linked via a non-amino acid linking region to an amino acid sequence comprising a Cellulose Binding Domain (CBD). In one embodiment the modified enzyme comprises coupling CBD from Clostridium *cellulovorans* with Endolase (a cellulolytic enzyme from *Hansenula insolens*) with the PEG linker PEG(NPC)2. CBD conjugates are also prep'd. with Savinase (proteolytic enzyme), Purafact (amylolytic enzyme), Lipolase (lipolytic enzyme), Pulpzyme (xylanase), dextranucrase and transferases EC 2.3.2.13 and EC 2.4.1.19, Pectinex (pectinase), and laccase from *Myceliophthora thermophila*. The present invention further relates to laundry detergent and/or fabric care compns. comprising such modified enzyme(s). These

compns. provide a higher effective concn. of the enzyme at its substrate location and therefore, improved enzymic benefits.

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 36 OF 40 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003) on STN

ACCESSION NUMBER: 95:15704 AGRICOLA
DOCUMENT NUMBER: IND20447798
TITLE: Transcriptional analysis of the Clostridium **cellulovorans** endoglucanase gene, engB.
AUTHOR(S): Attwood, G.T.; Blaschek, H.P.; White, B.A.
CORPORATE SOURCE: AgResearch, Palmerston North, New Zealand
AVAILABILITY: DNAL (QR1.F44)
SOURCE: FEMS microbiology letters, Dec 15, 1994. Vol. 124, No. 3. p. 277-284
Publisher: Amsterdam, The Netherlands : Elsevier Science Publishers.
CODEN: FMLED7; ISSN: 0378-1097
NOTE: Includes references
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Article
FILE SEGMENT: Non-U.S. Imprint other than FAO
LANGUAGE: English

AB An **endoglucanase** gene, which was shown to be identical to the previously sequenced engB gene [Attwood et al. (1993) Abstr. Ann. Meet. Am. Soc. Microbiol.], was isolated from a Clostridium **cellulovorans** genomic library. Because of the lack of transcriptional information concerning engB we examined its expression in C. **cellulovorans** and in the heterologous hosts *Escherichia coli* and C. *acetobutylicum* following transformation of engB. Northern analysis suggested that both *E. coli* and C. *acetobutylicum* produced several transcripts of various sizes. C. **cellulovorans** produced a single transcript of 1600 bp with the relative amount of engB mRNA from cellulose-grown cells being much greater than that from cellobiose-grown cells. Primer extensions showed that engB was transcribed from a single transcription initiation site in C. **cellulovorans** preceded by sequences similar to promoter sequences found in Gram-positive bacteria. Primer extensions from both *E. coli* and C. *acetobutylicum* strains containing the engB gene showed multiple transcription initiation sites, none of which corresponded to the site determined in C. **cellulovorans**. We conclude that transcriptional control of the engB gene is less stringent in heterologous backgrounds and postulate that expression of the engB gene in C. **cellulovorans** is increased in the presence of cellulose.

L6 ANSWER 37 OF 40 SCISEARCH COPYRIGHT 2003 THOMSON ISI on STN
ACCESSION NUMBER: 92:677920 SCISEARCH
THE GENUINE ARTICLE: JY118
TITLE: A NOVEL POLYSACCHARIDE HYDROLASE CDNA (CELD) FROM NEOCALLIMASTIX-PATRICIARUM ENCODING 3 MULTIFUNCTIONAL CATALYTIC DOMAINS WITH HIGH **ENDOGLUCANASE**, CELLOBIOHYDROLASE AND XYLANASE ACTIVITIES
AUTHOR: XUE G P (Reprint); GOBIUS K S; ORPIN C G
CORPORATE SOURCE: CSIRO, DIV TROP CROPS & PASTURES, 306 CARMODY RD, ST LUCIA, QLD 4067, AUSTRALIA (Reprint)
COUNTRY OF AUTHOR: AUSTRALIA
SOURCE: JOURNAL OF GENERAL MICROBIOLOGY, (NOV 1992) Vol. 138, Part 11, pp. 2397-2403.
ISSN: 0022-1287.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 34

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB A plant polysaccharide hydrolase **cDNA**, designated celD, was isolated from a **cDNA** library of the rumen fungus *Neocallimastix patriciarum*. The enzyme encoded by celD had **endoglucanase**, cellobiohydrolase and xylanase activities. Deletion analysis revealed that celD **cDNA** can be truncated to code for three catalytically active domains. Each domain had the same substrate specificity as the enzyme produced by the untruncated celD and also possessed cellulose-binding capacity. Substrate competition studies showed that carboxymethylcellulose and xylan appear to compete with methylumbelliferyl cellobioside for the same active site within each domain. Expression of celD transcript in the rumen fungus was constitutive and was not affected by the presence of cellulose in the culture medium.

L6 ANSWER 38 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 1992:229198 CAPLUS
DOCUMENT NUMBER: 116:229198
TITLE: Nucleotide sequence and characteristics of
endoglucanase gene engB from *Clostridium cellulovorans*
AUTHOR(S): Foong, Frances; Hamamoto, Tetsuo; Shoseyov, Oded; Doi, Roy H.
CORPORATE SOURCE: Dep. Biochem. Biophys., Univ. California, Davis, CA, 95616, USA
SOURCE: Journal of General Microbiology (1991), 137(7), 1729-36
CODEN: JGMIAN; ISSN: 0022-1287
DOCUMENT TYPE: Journal
LANGUAGE: English

AB An **endoglucanase** gene, engB, from *C. cellulovorans*, previously cloned into pUC19, has been further characterized and its product investigated. The enzyme, EngB, encoded by the gene was secreted into the periplasmic space of *Escherichia coli*. The enzyme was active against CM-cellulose, xylan and lichenan but not Avicel (cryst. cellulose). The sequenced gene showed an open reading frame of 1323 bp and coded for a protein with a mol. mass of 48.6 kDa. The mRNA contained a typical gram-pos. ribosome-binding site sequence GGAGG and a sequence coding for a putative signal peptide. There is high amino acid and base sequence homol. between the N-terminal regions of EngB and another *C. cellulovorans* **endoglucanase**, EngD, but they differ significantly in their C-termini. Deletion analyses revealed that up to 32 amino acids of the N-terminus and 52 amino acids of the C-terminus were not required for catalytic activity. The conserved reiterated domains at the C-terminus of EngB were similar to those from **endoglucanases** from other cellulolytic bacteria. According to deletion analyses, this region is not needed for catalytic activity.

L6 ANSWER 39 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 4
ACCESSION NUMBER: 1990:453634 CAPLUS
DOCUMENT NUMBER: 113:53634
TITLE: Cloning of *Clostridium cellulovorans* endo-1,4-.beta.-glucanase genes
AUTHOR(S): Shoseyov, Oded; Hamamoto, Tetsuo; Foong, Frances; Doi, Roy H.
CORPORATE SOURCE: Dep. Biochem. Biophys., Univ. California, Davis, CA, 95616, USA
SOURCE: Biochemical and Biophysical Research Communications (1990), 169(2), 667-72
CODEN: BBRCA9; ISSN: 0006-291X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A *C. cellulovorans* lambda gt11 gene bank was screened for endo-1,4-.beta.-glucanase [EC 3.2.1.4, EGase, Carboxy Me Cellulase (CMCase)] genes using a chromogenic substrate. Three genes (engA, engB, and engC) were isolated. The engB expressed the most active CMCase. The

engA encoded a bifunctional enzyme that displayed endo-1,4-.beta.-glucanase and .beta.-glucosidase activities. The 3 recombinant glucanases, when expressed in *Escherichia coli*, were partially degraded into multiform active enzymes as evidenced by their SDS-PAGE-CMC zymograms. None of the **clones** could degrade cryst. cellulose, thus supporting the hypothesis that the integrity of the *C. cellulovorans cellulase* complex was essential for its true cellulase activity.

L6 ANSWER 40 OF 40 CAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 5
ACCESSION NUMBER: 1991:76285 CAPLUS
DOCUMENT NUMBER: 114:76285
TITLE: A clostridium **cellulovorans** gene, engD, codes for both endo-.beta.-1,4-glucanase and cellobiosidase activities
AUTHOR(S): Hamamoto, Tetsuo; Shoseyov, Oded; Foong, Frances; Doi, Roy H.
CORPORATE SOURCE: Dep. Biochem. Biophys., Univ. California, Davis, CA, 95616, USA
SOURCE: FEMS Microbiology Letters (1990), 72(3), 285-8
CODEN: FMLED7; ISSN: 0378-1097
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A 5.8 kbp DNA fragment from *C. cellulovorans* (ATCC 35296) contg. the endo-.beta.-1,4-glucanase (1,4-.beta.-D-glucan glucanohydrolase, carboxymethylcellulase, CMCase; EC 3.2.1.4) gene (engD) was cloned in *Escherichia coli*. The **clone** harboring a subcloned 3.8 kb fragment in plasmid, pEQ52V, produced an enzyme that showed both endo-.beta.-1,4-glucanase activity as well as cellobiosidase activity. Zymograms with the engD encoded enzyme with carboxymethyl-cellulose as the substrate indicated that the mol. mass of the active protein was 50,000.

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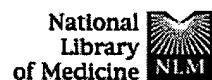
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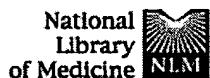
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Characterization of the cellulose-binding domain of the Clostridium cellulovorans cellulose-binding protein A.

Goldstein MA, Takagi M, Hashida S, Shoseyov O, Doi RH, Segel IH.

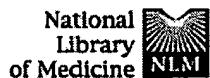
Department of Biochemistry and Biophysics, University of California Davis 95616.

DRT:JG

Cellulose-binding protein A (CbpA), a component of the cellulase complex of *Clostridium cellulovorans*, contains a unique sequence which has been demonstrated to be a cellulose-binding domain (CBD). The DNA coding for this putative CBD was subcloned into pET-8c, an *Escherichia coli* expression vector. The protein produced under the direction of the recombinant plasmid, pET-CBD, had a high affinity for crystalline cellulose. Affinity-purified CBD protein was used in equilibrium binding experiments to characterize the interaction of the protein with various polysaccharides. It was found that the binding capacity of highly crystalline cellulose samples (e.g., cotton) was greater than that of samples of low crystallinity (e.g., fibrous cellulose). At saturating CBD concentration, about 6.4 μ mol of protein was bound by 1 g of cotton. Under the same conditions, fibrous cellulose bound only 0.2 μ mol of CBD per g. The measured dissociation constant was in the 1 μ M range for all cellulose samples. The results suggest that the CBD binds specifically to crystalline cellulose. Chitin, which has a crystal structure similar to that of cellulose, also was bound by the CBD. The presence of high levels of cellobiose or carboxymethyl cellulose in the assay mixture had no effect on the binding of CBD protein to crystalline cellulose. This result suggests that the CBD recognition site is larger than a simple cellobiose unit or more complex than a repeating cellobiose moiety. This CBD is of particular interest because it is the first CBD from a completely sequenced nonenzymatic protein shown to be an independently functional domain.

PMID: 8376323 [PubMed - indexed for MEDLINE]

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Roles of the catalytic domain and two cellulose binding domains of *Thermomonospora fusca* E4 in cellulose hydrolysis.

Irwin D, Shin DH, Zhang S, Barr BK, Sakon J, Karplus PA, Wilson DB.

Department of Biochemistry, Molecular and Cell Biology, Cornell University, Ithaca, New York 14853, USA.

Thermomonospora fusca E4 is an unusual 90.4-kDa endocellulase comprised of a catalytic domain (CD), an internal family IIIc cellulose binding domain (CBD), a fibronectinlike domain, and a family II CBD. Constructs containing the CD alone (E4-51), the CD plus the family IIIc CBD (E4-68), and the CD plus the fibronectinlike domain plus the family II CBD (E4-74) were made by using recombinant DNA techniques. The activities of each purified protein on bacterial microcrystalline cellulose (BMCC), filter paper, swollen cellulose, and carboxymethyl cellulose were measured. Only the whole enzyme, E4-90, could reach the target digestion of 4.5% on filter paper. Removal of the internal family IIIc CBD (E4-51 and E4-74) decreased activity markedly on every substrate. E4-74 did bind to BMCC but had almost no hydrolytic activity, while E4-68 retained 32% of the activity on BMCC even though it did not bind. A low-activity mutant of one of the catalytic bases, E4-68 (Asp55Cys), did bind to BMCC, although E4-51 (Asp55Cys) did not. The ratios of soluble to insoluble reducing sugar produced after filter paper hydrolysis by E4-90, E4-68, E4-74, and E4-51 were 6.9, 3.5, 1.3, and 0.6, respectively, indicating that the family IIIc CBD is important for E4 processivity.

PMID: 9537366 [PubMed - indexed for MEDLINE]

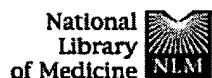
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Mutation analysis of the cellulose-binding domain of the Clostridium cellulovorans cellulose-binding protein A.

Goldstein MA, Doi RH.

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Section of Molecular and Cellular Biology, University of California, Davis 95616.

Cellulose-binding protein A (CbpA) has been previously shown to mediate the interaction between crystalline cellulose substrates and the cellulase enzyme complex of *Clostridium cellulovorans*. CbpA contains a family III cellulose-binding domain (CBD) which, when expressed independently, binds specifically to crystalline cellulose. A series of N- and C-terminal deletions and a series of small internal deletions of the CBD were created to determine whether the entire region previously described as a CBD is required for the cellulose-binding function. The N- and C-terminal deletions reduced binding affinity by 10- to 100-fold. Small internal deletions of the CBD resulted in substantial reduction of CBD function. Some, but not all, point mutations throughout the sequence had significant disruptive effects on the binding ability of the CBD. Thus, mutations in any region of the CBD had effects on the binding of the fragment to cellulose. The results indicate that the entire 163-amino-acid region of the CBD is required for maximal binding to crystalline cellulose.

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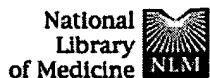
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Purification of a fusion protein using the family VI cellulose-binding domain of Clostridium stercorarium XynA.

Sakka K, Karita S, Kimura T, Ohmiya K.

Faculty of Bioresources, Mie University, Tsu, Japan.

PMID: 9928129 [PubMed - indexed for MEDLINE]

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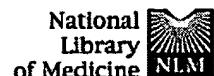
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Structure of a family IIIa scaffoldin CBD from the cellulosome of *Clostridium cellulolyticum* at 2.2 Å resolution. *Acta Crystallogr D Biol Crystallogr*. 2000 Dec;56 Pt 12:1560-8. PMID: 11092922 [PubMed - indexed for MEDLINE]

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Characterization of EngF from *Clostridium cellulovorans* and identification of a novel cellulose binding domain. *Appl Environ Microbiol*. 1998 Mar;64(3):1086-90. PMID: 9501449 [PubMed - indexed for MEDLINE]

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Appl Environ Microbiol. 1995 May;61(5):1980-6.
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8: [Goldstein MA, Doi RH.](#) Related Articles, Links

Mutation analysis of the cellulose-binding domain of the *Clostridium cellulovorans* cellulose-binding protein A.
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9: [Lamed R, Tormo J, Chirino AJ, Morag E, Bayer EA.](#) Related Articles, Links

Crystallization and preliminary X-ray analysis of the major cellulose-binding domain of the cellulosome from *Clostridium thermocellum*.
J Mol Biol. 1994 Nov 25;244(2):236-7.
PMID: 7966333 [PubMed - indexed for MEDLINE]

10: [Takagi M, Hashida S, Goldstein MA, Doi RH.](#) Related Articles, Links

The hydrophobic repeated domain of the *Clostridium cellulovorans* cellulose-binding protein (CbpA) has specific interactions with endoglucanases.
J Bacteriol. 1993 Nov;175(21):7119-22.
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12: [Poole DM, Morag E, Lamed R, Bayer EA, Hazlewood GP, Gilbert HJ.](#) Related Articles, Links

Identification of the cellulose-binding domain of the cellulosome subunit S1 from *Clostridium thermocellum* YS.
FEMS Microbiol Lett. 1992 Dec 1;78(2-3):181-6.
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The non-catalytic C-terminal region of endoglucanase E from *Clostridium thermocellum* contains a cellulose-binding domain.
Biochem J. 1991 Jan 15;273(Pt 2):289-93.
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